

LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Claim 1 (Currently Amended): A ceramic heater comprising:

a ceramic substrate having a work-heating surface which is configured to contact directly with a work to be heated ~~or to face a work to be heated across a space between the work heating surface and the work to be heated~~; and

a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate,

wherein the work-heating surface has a JIS B 0601 surface roughness of $R_{max} = 0.2$ to $200\ \mu\text{m}$.

Claim 2 (Currently Amended): A ceramic heater comprising:

a ceramic substrate having a work-heating surface which is configured to contact directly with a work to be heated ~~or to face a work to be heated across a space between the work heating surface and the work to be heated~~; and

a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate,

wherein said ceramic substrate contains an element other than its dominant constituent elements and the work-heating surface has a JIS B 0601 surface roughness of $R_{max} = 0.2$ to $200\ \mu\text{m}$.

Claim 3 (Previously Presented): The ceramic heater according to Claim 1

wherein said ceramic substrate is at least one member selected from the group consisting of a nitride ceramic, a carbide ceramic and an oxide ceramic.

Claim 4 (Currently Amended): A ceramic heater comprising:

a nitride ceramic substrate having a work-heating surface which is configured to contact directly with a work to be heated ~~or to face a work to be heated across a space between the work heating surface and the work to be heated~~; and

a heating element disposed either on a surface of the nitride ceramic substrate opposite to the work-heating surface or in the nitride ceramic substrate,

wherein said nitride ceramic substrate contains an element other than its principal constituent elements and the work-heating surface has a JIS B 0601 surface roughness of $R_{max} = 0.2$ to $200 \mu m$.

Claim 5 (Currently Amended): A ceramic heater comprising:

a nitride ceramic substrate having a work-heating surface which is configured to contact directly with a work to be heated ~~or to face a work to be heated across a space between the work heating surface and the work to be heated~~; and

a heating element disposed either on a surface of the nitride ceramic substrate opposite to the work-heating surface or in the nitride ceramic substrate,

wherein said nitride ceramic substrate contains at least one element selected from Na, B, Y, Li, Rb and Ca and the work-heating surface has a JIS B 0601 surface roughness value of $R_{max} = 0.2$ to $200 \mu m$.

Claim 6 (Canceled).

Claim 7 (Previously Presented): The ceramic heater according to Claim 4
wherein the content of at least one element selected from the group consisting of Y,
Li, Rb and Ca is not less than 0.1 weight %.

Claim 8 (Previously Presented): The ceramic heater according to Claim 4
wherein the content of at least one element selected from the group consisting of Na
and B is not less than 0.05 ppm.

Claim 9 (Previously Presented): The ceramic heater according to Claim 2,
wherein said ceramic substrate is at least one member selected from the group
consisting of a nitride ceramic, a carbide ceramic and an oxide ceramic.

Claim 10 (Canceled).

Claim 11 (Previously Presented): The ceramic heater according to Claim 5
wherein the content of at least one element selected from the group consisting of Y,
Li, Rb and Ca is not less than 0.1 weight %.

Claim 12 (Previously Presented): The ceramic heater according to Claim 5
wherein the content of at least one element selected from the group consisting of Na
and B is not less than 0.05 ppm.

Claims 13-16 (Canceled).

Claim 17 (Previously Presented): The ceramic heater according to Claim 1, wherein thermal conductivity of said ceramic substrate is 130 to 200 W/m·K.

Claim 18 (Previously Presented): The ceramic heater according to Claim 2, wherein thermal conductivity of said ceramic substrate is 130 to 200 W/m·K.

Claim 19 (Previously Presented): The ceramic heater according to Claim 4, wherein thermal conductivity of said ceramic substrate is 130 to 200 W/m·K.

Claim 20 (Previously Presented): The ceramic heater according to Claim 5, wherein thermal conductivity of said ceramic substrate is 130 to 200 W/m·K.

Claim 21 (Previously Presented): The ceramic heater according to Claim 1, wherein a thickness of said ceramic substrate is 0.5 to 5 mm.

Claim 22 (Previously Presented): The ceramic heater according to Claim 2, wherein a thickness of said ceramic substrate is 0.5 to 5 mm.

Claim 23 (Previously Presented): The ceramic heater according to Claim 4, wherein a thickness of said ceramic substrate is 0.5 to 5 mm.

Claim 24 (Previously Presented): The ceramic heater according to Claim 5, wherein a thickness of said ceramic substrate is 0.5 to 5 mm.

Claims 25-26 (Canceled).

Claim 27 (Previously Presented): The ceramic heater according to Claim 1, wherein the ceramic heater is a heater for heating a semiconductor wafer.

Claim 28 (Previously Presented): The ceramic heater according to Claim 2, wherein the ceramic heater is a heater for heating a semiconductor wafer.

Claim 29 (Currently Amended): A ceramic heater comprising:

a ceramic substrate having a work-heating surface which is configured to face a work to be heated across a space between the work-heating surface and the work to be heated; and
a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate,

wherein

said space is occupied by a gas, and

the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.05$ to $200 \mu\text{m}$.

Claim 30 (Currently Amended): A ceramic heater comprising:

a ceramic substrate having a work-heating surface which is configured to face a work to be heated across a space between the work-heating surface and the work to be heated; and
a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate,

wherein

said space is occupied by a gas,

said ceramic substrate contains an element other than its dominant constituent elements and

the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200 \mu\text{m}$.

Claim 31 (Currently Amended): A ceramic heater comprising:

a nitride ceramic substrate having a work-heating surface which is configured to face a work to be heated across a space between the work-heating surface and the work to be heated; and

a heating element disposed either on a surface of the nitride ceramic substrate opposite to the work-heating surface or in the nitride ceramic substrate,

wherein

said space is occupied by a gas,

said nitride ceramic substrate contains an element other than its principal constituent elements and

the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200 \mu\text{m}$.

Claim 32 (Currently Amended): A ceramic heater comprising:

a nitride ceramic substrate having a work-heating surface which is configured to face a work to be heated across a space between the work-heating surface and the work to be heated; and

a heating element disposed either on a surface of the nitride ceramic substrate opposite to the work-heating surface or in the nitride ceramic substrate,

wherein

said space is occupied by a gas,

said nitride ceramic substrate contains at least one element selected from Na, B, Y, Li, Rb and Ca and the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200\ \mu\text{m}$.

Claim 33 (New): A ceramic heater comprising:

a ceramic substrate having a work-heating surface which is configured to face a work to be heated across a space between the work-heating surface and the work to be heated; and

a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate,

said space is occupied by a gas, and

the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200\ \mu\text{m}$.

Claim 34 (New): A ceramic heater comprising:

a ceramic substrate having a work-heating surface;

a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate, and

a supporting body configured to hold a work to be heated apart from the work-heating surface,

wherein the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200\ \mu\text{m}$.

Claim 35 (New): A ceramic heater comprising:

a ceramic substrate having a work-heating surface;

a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate, and

a supporting body configured to hold a work to be heated apart from the work-heating surface,

wherein

said ceramic substrate contains an element other than its dominant constituent elements and

the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200 \mu\text{m}$.

Claim 36 (New): A ceramic heater comprising:

a nitride ceramic substrate having a work-heating surface;

a heating element disposed either on a surface of the nitride ceramic substrate opposite to the work-heating surface or in the nitride ceramic substrate, and

a supporting body configured to hold a work to be heated apart from the work-heating surface,

wherein

said nitride ceramic substrate contains an element other than its principal constituent elements and

the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.2$ to $200 \mu\text{m}$.

Claim 37 (New): A ceramic heater comprising:

a nitride ceramic substrate having a work-heating surface;

a heating element disposed either on a surface of the nitride ceramic substrate opposite to the work-heating surface or in the nitride ceramic substrate, and
a supporting body configured to hold a work to be heated apart from the work-heating surface,
wherein
said nitride ceramic substrate contains at least one element selected from Na, B, Y, Li, Rb and Ca and
the work-heating surface has a JIS B 0601 surface roughness of $R_{max} = 0.2$ to $200 \mu m$.

Claim 38 (New): The ceramic heater according to Claim 34,
wherein said supporting body is a supporting pin or a lifter pin.

Claim 39 (New): The ceramic heater according to Claim 35,
wherein said supporting body is a supporting pin or a lifter pin.

Claim 40 (New): The ceramic heater according to Claim 36,
wherein said supporting body is a supporting pin or a lifter pin.

Claim 41(New): The ceramic heater according to Claim 37,
wherein said supporting body is a supporting pin or a lifter pin.

Claim 42 (New): The ceramic heater according to Claim 34,

wherein said work to be heated is a semiconductor wafer and said supporting body is a supporting pin configured to hold said semiconductor wafer at a distance of 1 to 5000 μm apart from the work-heating surface of the ceramic heater.

Claim 43 (New): The ceramic heater according to Claim 35,

wherein said work to be heated is a semiconductor wafer and said supporting body is a supporting pin configured to hold said semiconductor wafer at a distance of 1 to 5000 μm apart from the work-heating surface of the ceramic heater.

Claim 44 (New): The ceramic heater according to Claim 36,

wherein said work to be heated is a semiconductor wafer and said supporting body is a supporting pin configured to hold said semiconductor wafer at a distance of 1 to 5000 μm apart from the work-heating surface of the ceramic heater.

Claim 45 (New): The ceramic heater according to Claim 37,

wherein said work to be heated is a semiconductor wafer and said supporting body is a supporting pin configured to hold said semiconductor wafer at a distance of 1 to 5000 μm apart from the work-heating surface of the ceramic heater.

Claim 46 (New): A ceramic heater comprising:

a ceramic substrate having a work-heating surface;

a heating element disposed either on a surface of the ceramic substrate opposite to the work-heating surface or in the ceramic substrate, and

a supporting body configured to hold a work to be heated apart from the work-heating surface,

wherein the work-heating surface has a JIS B 0601 surface roughness of $R_{\max} = 0.05$ to $200 \mu\text{m}$.

Claim 47 (New): The ceramic heater according to Claim 46,
wherein said supporting body is a supporting pin or a lifter pin.

Claim 48 (New): The ceramic heater according to Claim 47,
wherein said work to be heated is a semiconductor wafer and said supporting pin is configured to hold said semiconductor wafer at a distance of 1 to $5000 \mu\text{m}$ apart from the work-heating surface of the ceramic heater.